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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/869,630	09/21/2001	Peter Knox	PA 9847	5704

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AMERSHAM HEALTH  
IP DEPARTMENT  
101 CARNEGIE CENTER  
PRINCETON, NJ 08540-6231

EXAMINER

LAM, ANN Y

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/869,630	<b>Applicant(s)</b> KNOX ET AL.	
	<b>Examiner</b> Ann Y. Lam	<b>Art Unit</b> 1641	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on November 21, 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)              |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose et al., 6,015,565, in view of Pines et al., 6,426,058.

Rose et al. disclose the invention substantially as claimed.

More specifically, as to claims 1 and 10, Rose et al. disclose an in vitro method which is a test involving a reaction of one or more biological molecules (col. 49, lines 19-21) and which comprises:

conducting said reaction (col. 49, lines 1-25); and

observing a magnetic response resonance spectrum and/or NMR image of the label during the course of said reaction in order to detect a conformational change in the labeled biological molecule (col. 49, lines 32-35), wherein one of said one or more biological molecules comprises an assay reagent (i.e., the pharmaceutical candidate or alternatively the Glycoprotein B, see col. 49, lines 19-21);

Although Rose et al. teach use of NMR in general to detect a conformational change due to the binding of the candidate to the Glycoprotein B, Rose et al. however

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does not explicitly disclose labeling the biological molecule with hyperpolarized  $^{129}\text{Xe}$  to enhance NMR detection. Pines et al. however disclose this limitation.

Pines et al. teach use of NMR spectroscopy for determining structure and conformation of molecules (col. 1, lines 18-22) to analyze, characterize or image a biological sample (col. 12, lines 6-13; and col. 18, lines 61-64.) Pines et al. teach a method of measuring a signal transferred from a hyperpolarized noble gas atom to a non-noble gas NMR active nucleus such as  $^{13}\text{C}$  or  $^{15}\text{N}$  (col. 15, lines 26-39). Pines et al. teach that the detection is used to study regions of a structure that bind to or otherwise interact with the hyperpolarized noble gas. Such detection is used to study a macromolecule such as a protein (col. 15, line 62 – col. 16, line 6). Pines et al. teach further teaches that hyperpolarization of an NMR active nucleus enhances the noble gas magnetic resonance signal (column 1, lines 12-14; col. 18, lines 31-32.) Furthermore Pines et al. teach that a preferred hyperpolarized noble gas is  $^{129}\text{Xe}$  (col. 7, lines 53-54 and col. 9, lines 6-10.) Pines et al. teaches that hyperpolarized xenon can be used to elucidate structures of biologically relevant molecules, such as proteins, by selective polarization transfer to the protons of the specific sites where the xenon binds (col. 30, lines 38-41.)

It would have been obvious to one of ordinary skill in the art to utilize hyperpolarized  $^{129}\text{Xe}$  as taught by Pines et al. in the Rose et al. NMR detection of a binding or conformation change because Pines et al. teach that using hyperpolarized  $^{129}\text{Xe}$  will enhance the magnetic resonance signal, as would be desirable for obtaining more accurate results.

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As to the following claims, Rose et al. teach the limitations as follows.

As to claims 3 and 4, the assay is a binding assay (col. 49, lines 32-35.)

As to claim 5, the molecule is a protein (col. 49, lines 32-33.)

And as to claims 6-9, Rose et al. also does not disclose that the hyperpolarized  $^{129}\text{Xe}$  is enriched at a level of 40% or more, or that the degree of hyperpolarisation is 8% or more, or that the method is performed in a solution wherein the solvent has a viscosity in the range of 700 to 1500 mPs, or that the pressure of the xenon gas is at least 5 bar.

Since these claimed ranges are optimum or workable ranges, it would have been obvious to modify the Rose et al. reference to provide these ranges because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum of workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 233.)

### ***Response to Arguments***

Applicant's arguments with respect to the above rejected claims have been considered but are moot in view of the new grounds of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Balamore, WO 95/27438, teaches labeling a biological molecule with hyperpolarized  $^{129}\text{Xe}$  (see page 6, lines 12-20) in NMR detection (see page 7, lines

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6-12.) Balamore also teaches that the noble gas may be imaged in association with various materials or environments and that the sample being imaged using a noble gas may include an in vitro chemical or in vitro biological system (see page 6, lines 12-20 and page 7, lines 18-22)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on M-Sat 11-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.L. 

  
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12/07/05